

Abstract of the Disclosure

In order to provide an etching method for silicone oxide film by fluorocarbon plasma in semiconductor production, which is superior in precise manufacturing and highly selective to resist and silicone nitride film, two kinds of electronic temperature regions are generated in plasma, and a generation ratio of CF_2/F is controlled independently from a generation amount of ions by making areas of these two electronic temperature regions variable with a magnetic field gradient and a distance between a wafer and a wafer facing plane.